

Camera activities 1

What's it all about?

Activities for the first IR camera section of the show. Images are only shown in black and white.

1. Look at the audience in infrared
2. Hot human – one volunteer

Objectives:

1. Get over initial excitement of seeing themselves on camera
2. Relate brighter areas to warmer objects
3. Appreciate that the camera shows information not visible to our eyes
4. Get familiar with jargon words, including “infrared” and (for KS3) “emitting”

1. Look at the audience in infrared

- Switch laptop to showing camera input (in black and white)
- Give them a little time to be silly, wave etc, to get this out of their system
- Move the camera across the audience
- Leave it pointing somewhere boring/static while you move on to the next bit

2. Hot human – one volunteer

Warning: don't choose a woman in a thin top, as their bra may be visible.

Warning: avoid groin area, focus above waist height. Don't ask people to undress/lift clothing.

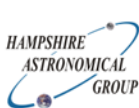
- Ask the audience which parts of their face / body are hotter or cooler
- Ask them to rub their hands together
- Get them to do a (slow) twirl – checking there is space to do this safely
- Zoom in on their face to see more detail
- Ask people what it will be like *inside* their mouth – get them to open mouth
- Ask them to suck air in through clenched teeth (this will cool them)

3. Box trick – one volunteer

Set up:

- The Lego model has been on the heat pad throughout the show
- Three boxes on a tray, stuck down if necessary, which have not been touched during the show, all equilibrated to room temperature (keep them in thermally uniform area, not near heat pad).
- Two boxes contain a 1p coin, the other is empty – and you know which is which
- Think in advance about how you can hide the model out of view of the audience

A chance to win a little Webb telescope Lego model! (Show model). I need a volunteer. Is it anyone's birthday today? (Or soon?) They have first dibs at being the volunteer. Or if you choose, avoid the person with the posh haircut/shoes. Place model back on heat pad while choosing/welcoming volunteer.



Unplug camera and give to volunteer. Explain they don't need to press anything, just to point it. Let them practice pointing around the room (they will be keen to play with it). Now ask them to hold it to their chest. Site them off to one side so they're not too exposed while you hide the model.

Show the boxes on the tray. Tell them you are going to put the model in one of the boxes.

WITH BOXES OUT OF SIGHT: take the Lego model and hide it inside the empty box. Talk about what you're doing to avoid radio silence and to draw attention away from the volunteer. Do not let the boxes move on the tray. Hold the box to transfer heat from your hands onto it. It is important that you do this out of audience view so that they can understand that the IR information is not 'obvious'. Tell the volunteer to keep the camera down/to their chest until they *need it*.

BACK IN VIEW: tell the volunteer that they can win the model but ONLY if they correctly ID which box it is inside. They can open ONLY one box. They are not allowed to touch the boxes before choosing which. But wait for a moment as first you want to see what the audience think.

Ask audience which box they think it's in, hands up. This gives time for more heat transfer to the box for it to glow nicely.

Clear instructions to stop the volunteer going too quickly – first they can check out the boxes from where they are stood now. Think about it, how could they work out which box is it in? Hopefully they will explain to you how they are going to do it.

Don't tell the volunteer directly to use the camera unless they look really confused. Hopefully other kids will cue them to do this. Maybe look at it and nod to give permission if necessary.

Get them to tell you which box, and why they think it's in there. Ask the audience if they can see anything different about that box. Ask why can't they see the difference (because their eyes don't see infrared). Ask if the volunteer is really sure. Create a little tension.

Ask them to put the camera down and go to open their box. Remind them which one. Watch them as they open it, hopefully they'll brandish the model and everyone will clap. If not, then get them to hold it up to show everyone. Big clap, take their seat. You may wish to reveal that the other bags just had 1p coins inside.

Recap – being able to see infrared gave Fred more information than we had from our eyes. By being able to see where infrared was being emitted, Fred had more information than we did. And was even able to work it out from a distance.

AstroBoost Project

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